



## Changes in European temperature extremes can be predicted from changes in PDF central statistics

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### Abstract:

Although uncertainties are still large, many potentially dangerous effects have already been identified concerning the impacts of global warming on human societies. For example, the record-breaking 2003 summer heat wave in Europe has given a glimpse of possible future European climate conditions. Here we use an ensemble of regional climate simulations for the end of the twentieth and twenty-first centuries over Europe to show that frequency, length and intensity changes in warm and cold temperature extremes can be derived to a close approximation from the knowledge of changes in three central statistics, the mean, standard deviation and skewness of the Probability Distribution Function, for which current climate models are better suited. In particular, the effect of the skewness parameter appears to be crucial, especially in the case of cold extremes, since it mostly explains the relative warming of these events compared to the whole distribution. An application of this finding is that the future impacts of extreme heat waves and cold spells on non-climatological variables (e.g., mortality) can be estimated to a first-order approximation from observed time series of daily temperature transformed in order to account for simulated changes in these three statistics.

**Source:** <http://dx.doi.org/10.1007/s10584-009-9758-0>

### Resource Description

#### Climate Scenario :

specification of climate scenario (set of assumptions about future states related to climate)

Special Report on Emissions Scenarios (SRES)

**Special Report on Emissions Scenarios (SRES) Scenario:** SRES A2, SRES B2

#### Exposure :

weather or climate related pathway by which climate change affects health

Temperature

**Temperature:** Extreme Cold, Extreme Heat

#### Geographic Feature:

resource focuses on specific type of geography

# Climate Change and Human Health Literature Portal

None or Unspecified

## **Geographic Location:**

resource focuses on specific location

Non-United States

**Non-United States:** Europe

## **Health Impact:**

specification of health effect or disease related to climate change exposure

Injury

## **Mitigation/Adaptation:**

mitigation or adaptation strategy is a focus of resource

Adaptation

## **Model/Methodology:**

type of model used or methodology development is a focus of resource

Exposure Change Prediction

## **Resource Type:**

format or standard characteristic of resource

Research Article

## **Timescale:**

time period studied

Long-Term (>50 years)

## **Vulnerability/Impact Assessment:**

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content